

Amendments to the Claims:

This listing of the claims will replace all prior versions, and listings, of the claims in the application:

Listing of the Claims:

1. (Currently Amended) A method for evaluating a feature, comprising:
receiving an image of the feature;
determining respective coordinates of a plurality of points on an edge of the feature in the image;
fitting a figure having a non-circular and non-linear shape to the plurality of points;
thereafter determining respective distances between the plurality of points and the figure having the non-circular and non-linear shape; and
computing ~~a~~ at least one roughness parameter for the feature using the respective distances, wherein computing the at least one roughness parameter comprises computing a contact edge roughness (CER) based on a sum of squares of the respective distances and a number of degrees of freedom of the figure.
2. (Cancelled)
3. (Currently Amended) ~~The method according to claim 1~~ A method for evaluating a feature, comprising:
receiving an image of the feature;
determining respective coordinates of a plurality of points on an edge of the feature in the image;
fitting a figure having a non-circular and non-linear shape to the plurality of points;
thereafter determining respective distances between the plurality of points and the figure having the non-circular and non-linear shape; and
computing at least one roughness parameter for the feature using the respective distances,
wherein computing the at least one ~~roughness~~ roughness parameter further comprises
computing a correlation length (CL) based on a sum of ~~the~~ squares of the respective distances, a

number of degrees of freedom of the figure, and an average of squares of differences of the respective distances.

4. (Currently Amended) The method according to claim 1, wherein computing the at least one roughness parameter further comprises performing a Fourier analysis of the respective distances, and generating a power spectrum based on the Fourier analysis.

5. (Original) The method according to claim 4, wherein generating the power spectrum comprises filtering results of the Fourier analysis.

6. (Previously Presented) The method according to claim 5, wherein filtering the results comprises selecting a filter based on a process used to form the feature.

7. (Currently Amended) The method according to claim 1, wherein the feature is formed on a substrate, and wherein the feature and the substrate are in part of a semiconductor wafer.

8. (Original) The method according to claim 7, wherein the feature comprises a contact hole.

9. (Original) The method according to claim 1, wherein receiving the image comprises generating the image with a scanning electron microscope.

10. (Original) The method according to claim 1, wherein the figure comprises an ellipse.

11. (Original) The method according to claim 1, wherein the figure has a known shape.

12. (Currently Amended) The method according to claim 1, wherein fitting the figure comprises determining a nominal shape of the figure by averaging at least some of the plurality of the points.

13. (Previously Presented) The method according to claim 1, wherein the figure is a closed figure.

14. (Currently Amended) The method according to claim 1, wherein the distance is a perpendicular distance to the figure or a radial distance.
15. (Previously Presented) The method according to claim 1, wherein the feature is a reticle, a part of the reticle, or a cast of a structure.
16. (Previously Presented) A method for evaluating a feature, comprising:
receiving an image of the feature;
determining respective coordinates of a first plurality of points on a first edge of the feature in the image;
fitting a first figure having a first non-circular and non-linear shape to the first plurality of points;
determining respective coordinates of a second plurality of points on a second edge of the feature in the image;
fitting a second figure having a second non-circular and non-linear shape to the second plurality of points;
thereafter determining respective distances between the first plurality of points and the first figure having the first non-circular and non-linear shape and respective distances between the second plurality of points and the second figure having the second non-circular and non-linear shape; and
computing a roughness parameter for the feature in response to the respective distances.
17. (Currently Amended) Apparatus for evaluating a feature, comprising:
an imaging unit ~~which is~~ adapted to generate an image including the feature; and
a processor ~~which is~~ adapted to:
determine respective coordinates of a plurality of points on an edge of the feature in the image,
fit a figure having a non-circular and non-linear shape to the plurality of points,
thereafter determine respective distances between the plurality of points and the figure having the non-circular and non-linear shape, and

compute ~~a~~ at least one roughness parameter for the feature in response to the respective distances, wherein the at least one roughness parameter comprises a contact edge roughness (CER), and the CER is computed based on a sum of squares of the respective distances and a number of degrees of freedom of the figure.

18. (Cancelled)

19. (Currently Amended) ~~The apparatus according to claim 17~~ Apparatus for evaluating a feature, comprising:

an imaging unit adapted to generate an image including the feature; and

a processor adapted to:

determine respective coordinates of a plurality of points on an edge of the feature in the image,

fit a figure having a non-circular and non-linear shape to the plurality of points,

thereafter determine respective distances between the plurality of points and the figure having the non-circular and non-linear shape, and

compute at least one roughness parameter for the feature in response to the respective distances, wherein ~~computing the~~ at least one roughness parameter comprises ~~computing~~ a correlation length (CL), and the CL is computed based on a sum of the squares of the respective distances, a number of degrees of freedom of the figure, and an average of squares of differences of the respective distances.

20. (Currently Amended) The apparatus according to claim 17, wherein computing the at least one roughness parameter comprises performing a Fourier analysis of the respective distances, and wherein the processor is further adapted to generate a power spectrum based on the Fourier analysis.

21. (Original) The apparatus according to claim 20, wherein generating the power spectrum comprises filtering results of the Fourier analysis.

22. (Currently Amended) The apparatus according to claim 21, wherein the filtering ~~the results~~ comprises selecting a filter based on a process used to form the feature.

23. (Currently Amended) The apparatus according to claim 17, wherein the feature is formed on a substrate, and wherein the substrate and the feature are ~~in part of~~ a semiconductor wafer.

24. (Original) The apparatus according to claim 23, wherein the feature comprises a contact hole.

25. (Currently Amended) The apparatus according to claim 17, wherein the imaging unit and the processor are ~~comprised in part of~~ a scanning electron microscope.

26. (Original) The apparatus according to claim 17, wherein the figure comprises an ellipse.

27. (Original) The apparatus according to claim 17, wherein the figure has a known shape.

28. (Currently Amended) The apparatus according to claim 17, wherein the processor is further adapted to determine a nominal shape of the figure by averaging at least some of the plurality of ~~the~~ points.

29. (Previously Presented) The apparatus according to claim 17, wherein the figure is a closed figure.

30. (Currently Amended) The apparatus according to claim 17, wherein the distance is a perpendicular distance to the figure or a radial distance.

31. (Previously Presented) The apparatus according to claim 17, wherein the feature is a reticle, a part of the reticle, or a cast of a structure.

32. (Currently Amended) Apparatus for evaluating a feature, comprising:
an imaging unit ~~which is~~ adapted to generate an image including the feature; and
a processor ~~which is~~ adapted to:
determine respective coordinates of a first plurality of points on a first edge of the feature in the image,

fit a first figure having a first non-circular and non-linear shape to the first plurality of points,
 determine respective coordinates of a second plurality of points on a second edge of the feature in the image,
 fit a second figure having a second non-circular and non-linear shape to the second plurality of points,
 thereafter determine respective distances between the first plurality of points and the first figure having the first non-circular and non-linear shape and respective distances between the second plurality of points and the second figure having the second non-circular and non-linear shape, and
 compute a roughness parameter for the feature in response to the respective distances.

33. (Currently Amended) A method for evaluating a feature, comprising:
 receiving an image of the feature;
 determining respective coordinates of a plurality of points on an edge of the feature in the image;
 fitting a figure having a non-circular and non-linear shape to the plurality of points;
 thereafter determining respective distances between the plurality of points and the figure having the non-circular and non-linear shape; and
 computing a correlation length based on a sum of the squares of the respective distances, a number of degrees of freedom of the figure, and an average of squares of differences of the respective distances.

34. (Previously Presented) A method for evaluating a feature, comprising:
 receiving an image of the feature;
 determining respective coordinates of a plurality of points on an edge of the feature in the image;
 fitting a figure having a non-circular and non-linear shape to the plurality of points;
 thereafter determining respective distances between the plurality of points and the figure having the non-circular and non-linear shape;
 performing a Fourier analysis of the respective distances; and

filtering results of the Fourier analysis based on a process used to form the feature.

35. (Previously Presented) A method for evaluating a feature, comprising:
receiving an image of the feature;
determining respective coordinates of a plurality of points on an edge of the feature in the image;
fitting a figure having a non-circular and non-linear shape to the plurality of points;
thereafter determining respective distances between the plurality of points and the figure having the non-circular and non-linear shape;
performing a Fourier analysis of the respective distances; and
filtering results of the Fourier analysis based on a shape of the feature.
36. (Currently Amended) Apparatus for evaluating a feature, comprising:
an imaging unit ~~which is~~ adapted to generate an image including the feature; and
a processor ~~which is~~ adapted to:
determine respective coordinates of a plurality of points on an edge of the feature in the image,
fit a figure having a non-circular and non-linear shape to the plurality of points,
thereafter determine respective distances between the plurality of points and the figure having the non-circular and non-linear shape, and
compute a correlation length based on a sum of ~~the~~ squares of the respective distances, a number of degrees of freedom of the figure, and an average of squares of differences of the respective distances.
37. (Currently Amended) Apparatus for evaluating a feature, comprising:
an imaging unit ~~which is~~ adapted to generate an image including the feature; and
a processor ~~which is~~ adapted to:
determine respective coordinates of a plurality of points on an edge of the feature in the image,
fit a figure having a non-circular and non-linear shape to the plurality of points,
thereafter determine respective distances between the plurality of points and the figure having the non-circular and non-linear shape,

perform a Fourier analysis of the respective distances, and
filter results of the Fourier analysis in response to a process used to form the
feature.

38. (Currently Amended) Apparatus for evaluating a feature, comprising:
an imaging unit ~~which is~~ adapted to generate an image including the feature; and
a processor ~~which is~~ adapted to:
 determine respective coordinates of a plurality of points on an edge of the feature
in the image,
 fit a figure having a non-circular and non-linear shape to the plurality of points,
 thereafter determine respective distances between the plurality of points and the
figure having the non-circular and non-linear shape,
 perform a Fourier analysis of the respective distances, and
 filter results of the Fourier analysis in response to a shape of the feature.